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Tripospermum sinense sp. nov. from China

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Abstract—*Tripospermum sinense*, a new species isolated from submerged dicotyledonous leaves, is described and illustrated. It is characterized by solitary hyaline branched conidia composed of a short main axis and four asymmetrical lateral branches and by conidiogenous cells cicatrized after the conidia have detached.

Key words — aquatic hyphomycetes, morphology, taxonomy

Introduction

Tripospermum Speg. was established with *T. acerinum* (P. Syd.) Speg. as its type (Spegazinni 1918). The genus is characterized by the production of acrogenous or pleurogenous, hyaline to melanocratic, multiseptate, branched conidia often comprising a short main axis with 2–4 straight lateral branches (Ellis 1971). Twenty-seven species have been included in *Tripospermum* (Rocha et al. 2010; Index Fungorum 2016). *Tripospermum chiayiense* Matsush. and *T. variabile* Matsush. were originally described from Taiwan (Matsushima 1980, 1983), but there have been no reports of *Tripospermum* from mainland China.

Several new fungal taxa occurring on decaying leaves or branches in China have been described recently (Bai et al. 2013; Guo et al. 2015; Li et al. 2014; Ma et al. 2011a,b; Ren et al. 2012; Yang et al. 2011, 2012; Zhang et al. 2009). During a study of the aquatic hyphomycetes on submerged dicotyledonous leaves collected in Leigong Mountain, Guizhou Province, China (a Nature

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Reserve and National Forest Park), we encountered a fungus sharing features of *Tripospermum;* we describe this here as a new species, *T. sinense*.

Materials & methods

Submerged dicotyledonous leaves were collected from a stream in Leigong Mountain, Guizhou Province, China. Samples were preserved in zip-locked plastic bags for transport to the laboratory where the rotten leaves were cut into 2–4 × 2–4 cm fragments, spread onto the surface of CMA medium (20 g cornmeal, 18 g agar, 40 mg streptomycin, 30 mg ampicillin, 1000 ml distilled water), and incubated for about 10 days in Petri dishes. Single conidia were isolated for cultivation on CMA with the aid of a BX51 microscope and sterilized needles and the cultures were morphologically examined after incubation on CMA at 28°C for one week. A frozen culture is deposited in the Herbarium of the Laboratory for Conservation and Utilization of Bio resources, Yunnan University, Kunming, Yunnan, P.R. China (YMF, formerly Key Laboratory of Industrial Microbiology and Fermentation Technology of Yunnan).

Taxonomy

Tripospermum sinense Ying Huang & Z.F. Yu, **sp. nov.** PLATE 1

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Differs from *Tripospermum camelopardus* by its five-radiate conidia, from *T. myrti* by its larger conidia, and from *T. porosporiferum* by its smaller conidia.

TYPE: PR China, Guizhou Province, Leigong Mountain Nature Reserve and National Forest Park, 25°53″N 108°24″E, elev. 2178 m, on submerged leaves of an unidentified dicotyledonous plant in a stream, Oct. 2013, Z.F. Yu (**Holotype**, YMF 1.04181 [frozen culture]).

ETYMOLOGY: *sinense* refers to the country in which this species was found.

COLONIES growing on CMA, reaching about 20 mm diameter after 10 days at 25°C. Colony effuse, brownish to dark brown, mycelium scanty superficial, mostly in substratum immersed, composed of branched, septate, hyaline to brown-tinged hyphae. Vegetative hyphae hyaline to fuliginous, (2–)3–4(–6) µm wide. CONIDIOGENOUS CELLS monoblastic, intercalary, determinate, slightly denticulate or thickened, scarred, hyaline. Conidial secession schizolytic. CONIDIA, solitary, hyaline, branched; mature conidia comprise a short main axis [(15–)16–20(–32) × 4–5 µm, (0–)1–2(–3)-septate] and (almost always) four straight branches [(10–)14–38(–42) × 3–5 µm, (1–)2(–6)-septate]; three of the branches are produced from the terminal cell of the main axis (a lateral branch, a distal branch, and a sharply reflexed branch that runs parallel to the main axis); the fourth branch is lateral and produced from the proximal cell of the reflexed branch; occasional conidia have either more or fewer than 4 branches.

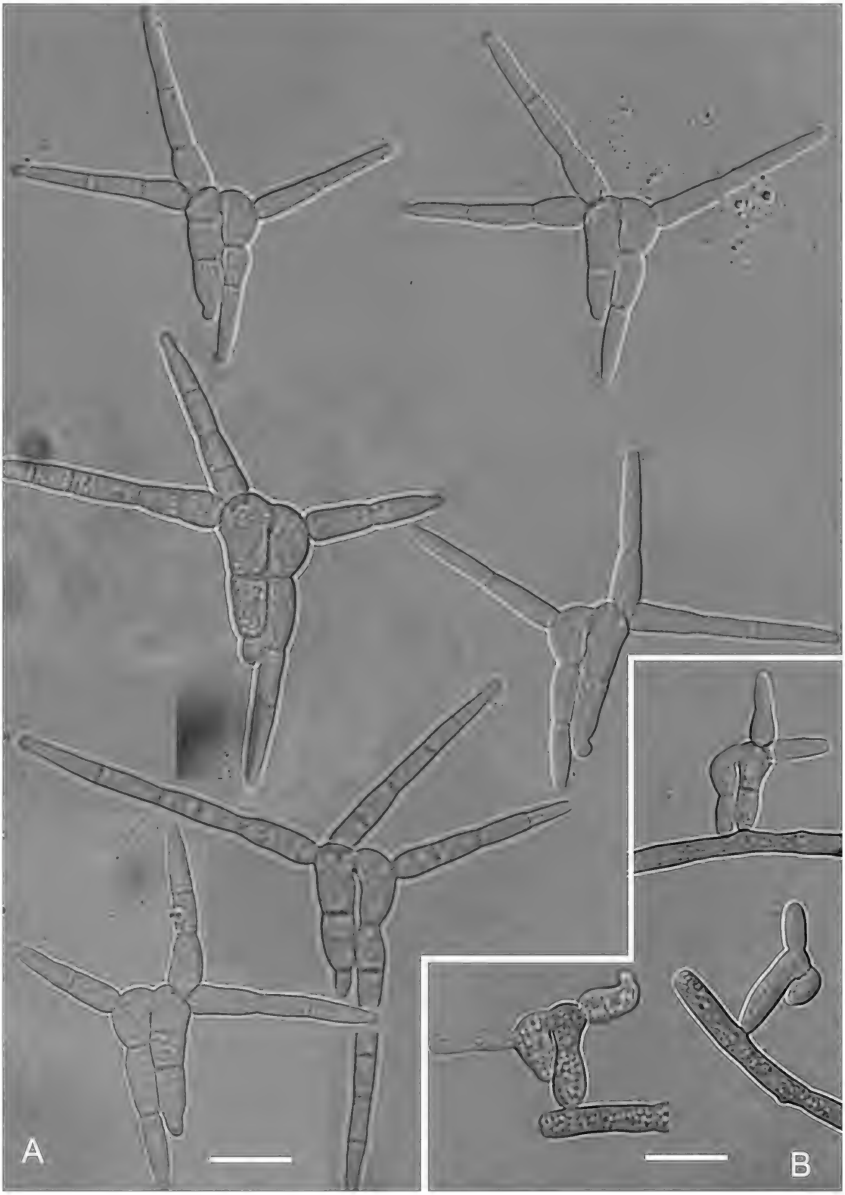

Plate 1. *Tripospermum sinense* (holotype, YMF 1.04181).
A. Conidia; B. Conidiogenous cells and conidia.
Scale bars = 10 µm.

Discussion

Tripospermum sinense fits well within the genus based on its conidiogenous cells, developmental process, branching pattern, and conidial shape. It resembles three species: *T. camelopardus* Ingold et al., *T. myrti* (Lind) S. Hughes, and *T. porosporiferum* Matsush. *Tripospermum camelopardus* is distinguished by conidia that generally have three lateral branches, with only one lateral branch attached to its main axis (Ingold et al. 1968). Like *T. sinense*, *T. myrti* produces 5-radiate conidia but differs by its smaller conidia [main axis 5–12 × 2.7 µm; parallel branches 13–30 × 4–5 µm with the other branches ≤35 µm long] and phialidic conidiogenous cells (Hughes 1951, Ingold & Cox 1957, Rocha et al. 2010). *Tripospermum porosporiferum* produces similarly shaped conidia, but its conidia are larger (Matsushima 1993), and its hyphae are about twice as wide as those of *T. sinense* (Rocha et al. 2010).

Tripospermum is morphologically similar to *Retiarius* D.L. Olivier. The mature conidia of the type species, *R. superficiaris* D.L. Olivier, resemble those of *T. sinense*, but conidia development substantially differs in *R. superficiaris:* the conidia branch dichotomously in early stages of development, then one of the two lobes branches dichotomously to produce a downwardly directed branch and a radially directed branch (Olivier 1978). In *T. sinense*, the conidial main axis produces thee branches from its distal cell, one of which is sharply reflexed to run parallel to the main axis, and a fourth branch is produced from the proximal cell of the reflexed branch.

Also, *Tripospermum sinense* (growing on dead submerged leaves) has a very different habitat from the two described *Retiarius* species (parasitic on pollen grains on the phylloplane of aerial living leaves; Olivier 1978). Therefore our new species has affinities with *Tripospermum*, rather than *Retiarius*.

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